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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/984,099	12/03/97	MCBRIDE K	CGNE-115-1-U

EXAMINER	
NELSON, A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	08/984,099	MCBRIDE ET AL.	
	Examiner	Art Unit	
	Amy Nelson	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12-16,18-26,28,30-39,42,44-55,57,59,61,65 and 66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-16,18-26,28,30-39,42,44-55,57,59,61,65 and 66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

1. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1638.

Claim Objections

2. Claims 12-14, 36, 38, 39, 51, 53, and 54 are objected to because of the following informalities:

At Claim 12, "a DNA construct" should be changed to --the DNA construct-- because it refers to a previous claim.

At Claim 13, "a cell" should be changed to --the cell-- because it refers to a previous claim.

At Claim 14, line 3, "a DNA construct" should be changed to --the DNA construct-- because it refers to a previous claim.

At Claim 36, "a DNA sequence" should be changed to --the DNA sequence-- because it refers to a previous claim.

At Claim 38, "a DNA construct" should be changed to --the DNA construct-- because it refers to a previous claim.

At Claim 39, "a plant cell" should be changed to --the plant cell-- because it refers to a previous claim.

At Claim 51, "a DNA sequence" should be changed to --the DNA sequence-- because it refers to a previous claim.

At Claim 53, "a DNA construct" should be changed to --the DNA construct-- because it refers to a previous claim.

At Claim 54, "a plant cell" should be changed to --the plant cell-- because it refers to a previous claim.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-10, 12-16, 18-26, 28, 30-39, 42, 44-55, 57, 59, 61, 65 and 66 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claimed invention is drawn broadly toward a promoter functional in a cotton fiber cell, a DNA construct comprising said promoter, as well as plants and plant cells transformed with said DNA construct, and methods of plant transformation with said DNA construct. Applicant

describes a single 4-4 DNA sequence from *Gossypium hirsutum* which has promoter activity and DNA constructs comprising said DNA sequence (pCGN5148, pCGN5149, and pCGN5616). It is not clear from the specification which precise sequence, *i.e.* which region of SEQ ID NO:7 or SEQ ID NO:11, is present in the vectors. Although Applicant describes other DNA sequences, Applicant does not describe the composition or structure of other DNA sequences which definitively have promoter activity, and hence it is not clear from the instant specification that the Applicant was in possession of the invention as broadly claimed.

See *University of California V. Eli Lilly and Co.*, 43 USPQ2d 1398 (Fed. Cir. 1997), which teaches that the disclosure of a process for obtaining cDNA from a particular organism and the description of the encoded protein fail to provide an adequate written description of the actual cDNA from that organism which would encode the protein from that organism, despite the disclosure of a cDNA encoding that protein from another organism.

5. Claims 1-10, 12-16, 18-26, 28, 30-39, 42, 44-55, 57, 59, 61, 65 and 66 are rejected under 35 U.S.C. 112, first paragraph, because the specification is enabling only for claims limited to the 4-4 promoter of pCGN5148, pCGN5149, and pCGN5616, as well as vectors, plant cells, and plants comprising said promoter operably linked to a coding sequence, and a method of modifying fiber color by transformation with said promoter operably linked to a DNA encoding tyrosinase, tryptophanase or indole oxygenase. The specification does not enable any person skilled in the art

to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Applicant broadly claims a promoter functional in a cotton fiber cell, a DNA construct comprising said promoter, as well as plants and plant cells transformed with said DNA construct, and methods of modifying fiber phenotype by plant transformation with said DNA construct.

Applicant teaches isolation of two cDNA clones which are highly expressed in cotton fiber, 4-4 (SEQ ID NO:1 and 2; encode SEQ ID NO:3) and Rac 13 (SEQ ID NO:12 and 13; encode SEQ ID NO:14) (Examples 1-3). Applicant teaches screening of a genomic library to obtain the upstream regions of the respective genomic clones, and Applicant teaches construction of two constructs with the 4-4 upstream region, pCGN5606 (SEQ ID NO:7) and pCGN5610 (SEQ ID NO:11), and one construct with the Rac13 upstream region, pCGN4735 (SEQ ID NO:15) (Example 6). Further, Applicant teaches constructs with the 4-4 promoter operably linked to a gene encoding the melanin biosynthetic enzyme, tyrosinase, from *Streptomyces antibioticus* (pCGN5148, pCGN5149), and operably linked to the genes encoding indigo biosynthetic enzymes, tryptophanase, from *E. coli,* and indole oxygenase, from *Rhodococcus* (pCGN5616). Applicant teaches that cotton plants transformed with said constructs have altered fiber color (Example 9).

Applicant does not teach any other sequences with promoter activity other than the 4-4 promoter sequence present in the constructs pCGN5148, pCGN5149, and pCGN5616, nor vectors, transformed plant cells, and transgenic plants comprising other promoters. Also,

Applicant does not teach a method of modifying any other fiber characteristic other than fiber color, using any other coding sequences other than a coding sequence encoding tyrosinase, tryptophanase or indole oxygenase.

In re Wands, 858F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988) lists eight considerations for determining whether or not undue experimentation would be necessary to practice an invention. These factors are: the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples of the invention, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art, and the breadth of the claims.

The state of the art for isolation of promoter sequences with a defined activity is highly unpredictable. Significant guidance is required with regard to hybridization/wash condtions and/or PCR conditions that will allow isolation of functionally related promoter sequences with similar activity. The region of a given promoter which has a specific activity can not be predicted, and involves the complex interaction of different subdomains (Benfey *et al.*; Science 250: 959-966, 1990, see Abstract, Fig. 3-5). Even a very small region may be critical for activity, and the criticality of a particular region must be determined empirically (Kim *et al.*; Plant Mol. Biol. 24: 105-117, 1994, Abstract, Tables 1-4, Fig. 1-2). Often different promoters from a family of genes have different transcriptional activity.

Although Applicant has isolated several upstream regions from 4-4 and Rac13 genes, Applicant only provided guidance for a single 4-4 upstream region (that of pCGN5148,

pCGN5149, and pCGN5616) as a promoter. It is unclear from the specification, the exact sequence present in those constructs, and Applicant is asked to clarify the sequence which is present in the three constructs of Example 9. Given the failure of Applicant to provide guidance for isolation of other functionally related cotton fiber active promoters, undue trial and error experimentation would be required to screen through the vast number of promoter fragments from any plant species to identify those that are related to the 4-4 promoter of the vectors pCGN5148, pCGN5149, and pCGN5616. A promoter must be defined according to its own transcriptional activity, or based on structural features of the promoter which have inherent functional activity, and not according to the function of the operably linked gene. Furthermore, without additional guidance from Applicant with respect to regions of the isolated upstream regions which are necessary or sufficient for any transcriptional activity, or for a particular type of transcriptional activity, undue trial and error experimentation would be required to screen through the vast number of different sized fragments from the different regions of the upstream region to determine those that are responsible for a promoter activity. Therefore, Applicant is only enabled for the promoter present in the vectors pCGN5148, pCGN5149, and pCGN5616.

The state of the art for modification of gene expression or of phenotypic characteristics in plants by genetic transformation is highly unpredictable and hence significant guidance is required to practice the art without undue experimentation. The specific effects of given promoters, leaders, DNA sequences, and terminator sequences on gene expression in transformed plants can not be anticipated reliably and must be determined empirically (Koziel, *et al.*; Plant Mol. Biol. 32:

393-405, 1996, abstract, pp. 402-403). In genetically modified plants, the introduced transgenes are sometimes not expressed, and they can also result in co-suppression effects. None of these effects are predictable, and the mechanisms of gene silencing are still not fully understood (Stam *et al.*; Ann. Bot. 79: 3-12, 1997, abstract, p. 9). Moreover, the phenotypic characteristics that will result from expression of a given DNA construct can not be reliably predicted. In fact, often the expected phenotypic result is not achieved. For example, antisense expression of polygalacturonase gene in transgenic tomato had no effect on fruit softening (Smith *et al.*; Nature 334: 724-726, 1988, p. 725).

Given the unpredictability in the art, the instant invention is not enabled given the lack of guidance in the specification with regard to what other DNA constructs, comprising what other promoters and regulatory sequences and what other coding sequences other than a tyrosinase, tryptophanase or indole oxygenase gene, result in a given type of modification of fiber phenotype in transgenic plants. Applicant teaches only how to transform cotton plants with the disclosed DNA constructs comprising the 4-4 promoter operably linked to a tyrosinase, tryptophanase or indole oxygenase gene to modify fiber color, and provides no guidance for how to otherwise modify fiber color in trangenic plants or how to modify other fiber phenotypes in transgenic plants. In the absence of such guidance, undue trial and error experimentation would be required to screen through the myriad of different DNA constructs and the vast number of transgenic plants to determine how to modify fiber phenotypes.

When the *Wands* factors are weighed it is concluded that undue experimentation would be required to practice the invention throughout the full scope of the claims, and therefore the invention is not enabled.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-10, 12-16, 18-26, 28, 30-39, 42, 44-55, 57, 59, 61, 65 and 66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At Claim 1, lines 2 and 4, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 2, line 2, the phrase "a transport signal encoding sequence" is indefinite, because it is not clear what is encompassed by the phrase. It is believed that Applicant intends --a sequence encoding a transit peptide--.

At Claim 3, "said transport signal encoding sequence comprises a plastid transit peptide" does not make sense. It is not clear how a DNA can comprise a peptide.

At Claim 4, the phrase "a transport signal encoding sequence for a signal peptide" is unclear. It is recommended that the phrase be changed to --a sequence encoding a transit peptide--.

At Claim 5, "DNA sequence ... comprises ... a vacuolar localization signal" is indefinite because it is unclear how a DNA can comprise a peptide. It is recommended that "vacuolar localization signal" be changed to --a sequence encoding a vacuolar targeting signal--.

At Claim 10, lines 2-3, "wherein said protein in a biosynthesis pathway in each of said two DNA sequences is not encoded by the same gene" does not make sense. Appropriate correction is required.

At Claim 14, line 1, the phrase "modifying fiber phenotype" is indefinite because it is not clear what is encompassed by the phrase. Fiber tissue has many different phenotypes which can be modified in many different ways. Appropriate correction is required to clarify the metes and bounds of the claimed invention. The phrase "phenotype of said fiber" at line 7 should be changed accordingly.

At Claim 14, line 4, it is recommended that "growing said plant cell to produce a plant" be changed to --regenerating a plant from said plant cell-- because a plant is produced by regeneration, not by growth of the cell alone.

At Claim 15, line 2, the phrase "a transport signal encoding sequence" is indefinite, because it is not clear what is encompassed by the phrase. It is believed that Applicant intends --a sequence encoding a transit peptide--.

At Claim 16, the phrase "a transport signal encoding sequence, which encodes a signal peptide" is unclear. It is recommended that the phrase be changed to --a sequence encoding a transit peptide--.

At Claim 18, line 1, "said DNA" lacks proper antecedent basis. Also, it is not clear how a single DNA can "comprise constructs," because a construct is a circular piece of DNA. Hence, a single DNA can only comprise a single construct. Appropriate correction is required.

Claim 22 is indefinite because cotton burr does not further limit cotton fiber. A cotton fiber is known in the art, and is used throughout the specification, to mean the epidermal hair of the seed. Hence, it does not make sense to further define it as a cotton burr, which is a rough or prickly envelope of a fruit. Appropriate correction is required.

At Claim 23, the phrase "transcriptional sequence" is indefinite, as it is not known what is intended by the phrase. It is believed that Applicant intends --promoter--. Also, SEQ ID NO:7 is the sequence of the construct pCGN5606, not of a promoter. Appropriate correction is required.

At Claim 24, the phrase "transcriptional sequence" is indefinite, as it is not known what is intended by the phrase. It is believed that Applicant intends --promoter--. Also, SEQ ID NO:15 is the sequence of the construct pCGN4735, not of a promoter. Appropriate correction is required.

At Claim 28, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 28, line 2, "the method" lacks proper antecedent basis. It is recommended that "the method of" be deleted.

At Claim 30, line 2, the phrase "a transport signal encoding sequence" is indefinite, because it is not clear what is encompassed by the phrase. It is believed that Applicant intends --a sequence encoding a transit peptide--.

At Claim 31, "said transport signal encoding sequence comprises a plastid transit peptide" does not make sense. It is not clear how a DNA can comprise a peptide.

At Claim 32, the phrase "a transport signal encoding sequence for a signal peptide" is unclear. It is recommended that the phrase be changed to --a sequence encoding a transit peptide--.

At Claim 33, "DNA sequence ... comprises ... a vacuolar localization signal" is indefinite because it is unclear how a DNA can comprise a peptide. It is recommended that "vacuolar localization signal" be changed to --a sequence encoding a vacuolar targeting signal--.

At Claim 42, line 2, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 42, line 2, "the method" lacks proper antecedent basis. It is recommended that "the method of" be deleted.

At Claim 44, lines 2 and 4, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 45, the phrase "a transport signal encoding sequence" is indefinite, because it is not clear what is encompassed by the phrase. It is believed that Applicant intends --a sequence encoding a transit peptide--.

At Claim 46, "said transport signal encoding sequence comprises a plastid transit peptide" does not make sense. It is not clear how a DNA can comprise a peptide.

At Claim 47, the phrase "a transport signal encoding sequence for a signal peptide" is unclear. It is recommended that the phrase be changed to --a sequence encoding a transit peptide--.

At Claim 48, "DNA sequence ... comprises ... a vacuolar localization signal" is indefinite because it is unclear how a DNA can comprise a peptide. It is recommended that "vacuolar localization signal" be changed to --a sequence encoding a vacuolar targeting signal--.

At Claim 55, lines 1-2, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 56, lines 2 and 4, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 59, lines 2 and 4, the phrase "transcriptional factor" is indefinite. In the art, a "transcription factor" is a protein which binds to the upstream region of a gene. It is believed that Applicant intends --promoter--. Appropriate correction is required.

At Claim 61, the phrase "transcriptional sequence" is indefinite, as it is not known what is intended by the phrase. It is believed that Applicant intends --promoter--. Also, SEQ ID NO:11 is the sequence of the construct pCGN5610, not of a promoter. Appropriate correction is required.

At Claim 65, the phrase "transcriptional sequence" is indefinite, as it is not known what is intended by the phrase. It is believed that Applicant intends --promoter--. Also, SEQ ID NO:7 is the sequence of the construct pCGN5606, not of a promoter. Appropriate correction is required.

At Claim 66, the phrase "transcriptional sequence" is indefinite, as it is not known what is intended by the phrase. It is believed that Applicant intends --promoter--. Also, SEQ ID NO:15 is the sequence of the construct pCGN4735, not of a promoter. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

9. Claims 1, 7, 9, 12, 13, 28, 34, 36-39, 42, 44, 49, 51-55, 57, and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by John *et al.* (PNAS 89: 5769-5773, 1992).

John discloses a cotton fiber specific promoter (Abstract; Fig. 2), as a well as a DNA construct comprising said promoter operably linked to the *gus* gene and a carrot extensin gene. The promoter of John could hybridize to SEQ ID NO:15 under the claimed low stringency wash conditions of 2X SSC, 42°C. John teaches production of transformed cotton cells and transgenic cotton plants comprising said DNA construct, and teaches that said transgenic plants have altered extensin mRNA production in their fiber (p. 5772, Fig. 4). Hence all of the claim limitations have been previously disclosed by John.

10. Claims 1, 7, 9, 12-14, 28, 34, 36-39, 42, 44, 49, 51-55, 57, and 59 are rejected under 35 U.S.C. 102(e) as being anticipated by John *et al.* (U.S. Patent 6,096,950).

John discloses several cotton fiber specific promoters (Abstract; SEQ ID NO:1-6; Col. 13-32), as a well as DNA constructs comprising said promoters operably linked to either the *gus* gene or to the ACC reductase gene. The promoters of John could hybridize to SEQ ID NO:15 under the claimed low stringency wash conditions of 2X SSC, 42°C. John teaches production of transformed cotton cells and transgenic cotton plants comprising said DNA constructs (Col. 7-8), and teaches that said transgenic plants have altered pigment production and other modified fiber phenotypes (Col. 14-15; Fig. 5, Fig. 12; Col. 7, lines 29-39). Hence all of the claim limitations have been previously disclosed by John.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1-10, 12, 13, 28, 30-39, 42, 44-55, 57, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over John *et al.* (PNAS 89: 5769-5773, 1992).

The teachings of John are discussed *supra.*

John does not disclose DNA constructs which further comprise a sequence encoding a transit peptide or a vacuolar targeting peptide, and John does not disclose DNA constructs comprising other coding sequences including all of the specifically claimed coding sequences.

Applicant admits that sequences encoding transit peptides and vacuolar targeting peptides were well known in the art at the time of Applicant's invention, as were other coding sequences. In fact, Applicant admits that all of the specifically claimed coding sequences were known in the art (specification, p. 11-20).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of Applicant's invention to include a DNA encoding a transit peptide or a vauolar localization signal in the DNA construct as such would allow intracellular targeting of the encoded protein. It further would have been obvious to substitute another coding sequence for the *gus* or the carrot extensin coding sequence, including any of the specifically claimed DNA sequences, in order to obtain fiber

specific expression of any of the encoded proteins. The different coding sequences, in that they provide for expression of an encoded protein, are functional equivalents, and it would have been obvious to substitute one functional equivalent for another. One would have had a reasonable expectation of success in view of the success of John.

13. Claims 1-10, 12-16, 18-22, 28, 30-39, 42, 44-55, 57, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over John *et al.* (U.S. Patent 6,096,950).

The teachings of John are discussed *supra*.

John does not disclose DNA constructs which further comprise a sequence encoding a transit peptide or a vacuolar targeting peptide, and John does not disclose DNA constructs comprising other coding sequences including all of the specifically claimed coding sequences.

Applicant admits that sequences encoding transit peptides and vacuolar targeting peptides were well known in the art at the time of Applicant's invention, as were other coding sequences. In fact, Applicant admits that all of the specifically claimed coding sequences were known in the art (specification, p. 11-20).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of Applicant's invention to include a DNA encoding a transit peptide or a vauolar localization signal in the DNA construct as such would allow intracellular targeting of the encoded protein. It further would have been obvious to substitute another coding sequence for the *gus* or the ACC reductase coding sequence, including any of the specifically claimed DNA sequences, in order to obtain fiber

specific expression of any of the encoded proteins. The different coding sequences, in that they provide for expression of an encoded protein, are functional equivalents, and it would have been obvious to substitute one functional equivalent for another. One would have had a reasonable expectation of success in view of the success of John.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy J. Nelson whose telephone number is (703) 306-3218. The examiner can normally be reached on Monday-Friday from 8:00 AM - 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Paula Hutzell, can be reached at (703) 308-4310. The fax phone number for this Group is (703) 308-4242 or (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application, or if the examiner cannot be reached as indicated above, should be directed to the Group receptionist whose telephone number is (703) 308-1234.

Amy Nelson

AMY J. NELSON, PH.D
PRIMARY EXAMINER

Amy J. Nelson, Ph.D.
February 5, 2001